

REMARKS

Initial remarks:

Applicant initially notes with appreciation the Examiner's indication in the March 17 Office Action that dependent Claim 7 would be allowable if appropriately rewritten. In this regard, new Claim 10 includes limitations included in dependent Claims 7 rewritten in independent form and is therefore believed to be in condition for allowance and such disposition is respectfully requested.

Objections To The Specification

Applicant respectfully requests that the objections to the specification be withdrawn in view of the amendments thereto.

Claim rejections under 35 U.S.C. § 102 and/or 35 U.S.C. § 103:

In the March 17 Office Action, the Examiner rejected Claims 1-4, 8 and 9 under 35 U.S.C. § 102(b) contending such claims are anticipated by Japanese Patent No. 6-160750 to Hirai et al. (Hirai), rejected Claims 5 and 6 under 35. U.S.C. § 103(a) contending that such claims are obvious in view of Hirai in combination with United States Patent No. 6,329,738 to Hung et al. (Hung), and rejected Claims 8 and 9 under 35. U.S.C. § 103(a) contending that such claims are obvious in view of Hirai in combination with United States Patent No. 6,366,414 to Aksyuk et al. (Aksyuk).

Applicant respectfully disagrees that Hirai discloses Applicant's invention as set forth in independent Claim 1 as amended herein, and respectfully submits that independent Claim 1, and all claims depending directly or indirectly therefrom are in condition for allowance. As summarized more fully below, in independent Claim 1, an actuation force pulls on lever means in order to rotate the lever means with respect to substrate means and thereby increase inclination of platform means with respect to the substrate means in the same direction that the lever means rotate. However, in Hirai, a pushing force is used to rotate driven parts in opposite directions folding them together to thereby increase inclination of a reflector on one of the parts with respect to the substrate.

More specifically, independent Claim 1 is directed to a microelectromechanical system comprising substrate means for fabricating microelectromechanical components thereon, platform means, fabricated on the substrate means, for supporting a desired optical element thereon, and at

least one rotatable lever means, also fabricated on the substrate means, for applying a tilting force to the platform means to achieve increased inclination of the platform means with respect to the substrate means in at least a first direction that is the same as a direction in which the lever means are rotatable. The platform means are elevatable in their entirety from the substrate means, and the lever means are rotatable in response to an actuation force pulling on the lever means that is mechanically coupled to the lever means and generated without utilizing any portion of the lever means and the platform means.

Hirai does not disclose the microelectromechanical system of independent Claim 1. Of particular significance is that Hirai does not teach increasing the inclination of platform means with respect to substrate means by pulling on lever means in order to rotate the lever means in the same direction (e.g., clockwise) that the platform means are inclined (e.g., clockwise) with respect to the substrate. In Hirai, in order to increase inclination of driven part 14 (and thus reflector 31 thereon) with respect to the substrate, the impressed voltage across fixed and moveable electrodes 11 and 12 must be changed to displace the moveable electrode 12 farther from the fixed electrode 11 and thereby push driven parts 14 and 15 laterally toward supporting plate 16 that is fixed to the substrate. Since lateral movement of the edge of driven part 14 connected to supporting plate 16 by joints 17 is constrained by supporting plate 16, driven parts 14 and 15 are folded together at joints 18 therebetween. In this regard, driven part 15 rotates in one direction (e.g., clockwise) with respect to the substrate about joints 19 connecting it to moveable electrode 12 while driven part 14 (and thus reflector 31 thereon) rotates in an opposite direction (e.g., counterclockwise) with respect to the substrate about joints 17.

A number of advantages are achieved with the microelectromechanical system of the present invention as compared with Hirai. One advantage is that pulling on the lever means in order to increase inclination of the platform means with respect to the substrate means is less likely to lead to undesirable deformation of the platform means. In this regard, in the system of Hirai as moveable electrode 12 moves away from fixed electrode 11, driven parts 14 and 15 are put in compression, especially when they are initially in a flat position as depicted in Fig. 2(a) of Hirai. Even though the compressive force may be small, small compressive forces and/or torsional forces applied to relatively thin (e.g., micro-scale) parts can lead to slight deformation of the parts, negatively impacting optical qualities of reflective surfaces thereon.

Based upon the foregoing, pending independent Claim 1, as well as its corresponding dependent claims, are allowable over Hirai. There is therefore no need to separately address the patentability of each dependent claim and/or the Examiner's interpretation in relation to any of the dependent claims or any of the references of record in relation thereto.

Conclusion:

In view of the foregoing, Applicant believes that all pending claims are in condition for allowance and such disposition is respectfully requested. In the event that a telephone conversation would further prosecution, the Examiner is invited to contact the undersigned.

Respectfully submitted,

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